REMARKS

Reconsideration of the application is respectfully requested.

In the Office Action dated August 22, 2007, claims 1-3, 6-7, 11-15, 20, 23-25, 28, 29, and 38-40, were rejected under 35 USC §103(a) as being unpatentable over Sielagoski et al. U.S. Patent No. 6,317,679 in view of Kato et al. U.S. Patent Publication No. 2004/0239179 or Kawazoe U.S. Patent No. 6,295,493, and claims 8-10, 16-19, 21, 22, and 30-37 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sielagoski et al. '679 and Kato et al. '179 or Kawazoe '493, and further in view of Butsuen et al. U.S. Patent No. 5,467,283, and claims 4, 5, 26, and 27, were rejected under 35 U.S.C. 103(a) as being unpatentable over Sielagoski et al. '679 and Kato et al. '179 or Kawazoe '493, and further in view of Fukada et al. U.S. Patent No. 5,627,756.

With respect to claim 1, the Office Action states that "the use of the change in lateral acceleration to determine when the vehicle [sic] is well known in the art at the time the invention was made and as shown in at least the paragraph 0058 of the Kato et al. reference or the column 9, lines 45-50 of the Kawazoe reference." One or more words after "vehicle" appear to be missing, such that it is not clear what is asserted to be "well-known in the art." Accordingly, applicant can only assume that the Office Action was intended to say that "use of change in lateral acceleration to determine *when a vehicle is in a turn* is well known in the art." Clarification is requested is, however, requested.

With respect to Kato et al. '179, this assertion appears to be incorrect. Specifically, Kato et al. '179 discloses a "lateral acceleration deviation ΔGy that is defined to be the absolute value of the target lateral acceleration Gyt and the detected actual lateral acceleration Gy obtained by the lateral acceleration sensor" (the target lateral acceleration is given by equation (1) of Kato et al. '179). The formula for calculating lateral acceleration deviation ΔGy is given by formula to: $\Delta Gy=|Gyt|-|Gy|$. As described at paragraph [0058] of Kato et al. '179, "the lateral acceleration deviation" is utilized to determine if the vehicle is in an understeer state, not whether the vehicle

is in a turn. Kato et al. '179 teaches utilizing a breaking force "That changes according to the value of the lateral acceleration deviation ΔGy . . . on only the rear wheel at the inner side of the turning direction . . . thereby forcibly producing a yawing moment on the vehicle in the direction same as the turning direction."

Thus, Kato et al. '179 teaches use of "lateral acceleration deviation" which is a difference between a target lateral acceleration and a measured lateral acceleration as set forth in equation (2) of Kato et al. '179. Clearly, the ΔGy of Kato et al. '179 is not the same thing as "detecting change in the vehicle's lateral acceleration" as recited in claim 1 of the present application.

Furthermore, it is not at all clear that the "lateral acceleration deviation ΔGy" of Kato et al. '179 could be used to determine if a vehicle is in a turn. As noted above, the "lateral acceleration deviation" of Kato et al. '179 is utilized to determine if a vehicle is in an understeer state, not whether or not a vehicle is in a turn. Applicant notes that no understeer would occur in both straight line travel and slow speed turns. Accordingly, the understeer-determining variable "lateral acceleration deviation" of Kato et al. '179 does not appear to be a viable quantity for determining if a vehicle is in a turn.

With respect to Kawazoe '493, at column 9, lines 45-50, this reference states that "In the aforesaid embodiments, it was determined that the vehicle was in the *turning transition state* from the steering angular velocity, but this can be determined also from the change rate of the lateral acceleration . . ." (emphasis added) At column 1, lines 18-22, Kawazoe '493 states that "<u>The turn transient state is a state wherein a steering angle is changing</u>, and the turning steady state is a state wherein the steering angle is held almost constant when turning." (emphasis added) Thus, the reference to utilizing change rate of lateral refers to determining if a vehicle is in a "turn transient state," <u>not</u> whether or not a vehicle is in a turn.

Kawazoe '493 discloses a steering angle sensor 26 and a steering angle velocity sensor 25 (column 4, lines 6-15). Kawazoe '493 teaches determining if a vehicle is in a steady state turn (i.e., the steering wheel is held at the same angle) versus a turn wherein the radius of the turn is

varying (i.e., the steering wheel angle is changing). Clearly, determining if a vehicle is in a "turn transient state" rather than a "turning steady state" is not the same thing as determining "when the vehicle is in a turn" as recited in claim 1 of the present application.

Neither Sielagoski et al. '679, Kato et al. '179, nor Kawazoe '493, disclose "determining when the vehicle is in a turn based on a detected change in the vehicle's lateral acceleration" as recited in claim 1, such that no combination of these references can possibly result in the arrangement of claim 1.

Furthermore, Sielagoski et al. '679 utilizes lateral acceleration profiles that are "empirically defined based on the relative position of the vehicle traversing a curve and vehicle operator comfort" (column 5, lines 42-44). The position of the vehicle on a curved path is based on the vehicle yaw rate and yaw acceleration (column 5, lines 29-31). Thus, Sielagoski et al. '679 utilizes estimated lateral acceleration based on an empirical relationship. Clearly, if Sielagoski '679 contemplated use of measured lateral acceleration, it would not teach use of yaw rate and yaw acceleration combined with an empirical estimate of lateral acceleration.

Although Sielagoski et al. '679 teaches use of vehicle yaw rate and yaw acceleration to determine the relative position of the vehicle on a curve (column 5, lines 29-31), but this is not the same as utilizing measured lateral acceleration. For example, if a vehicle were spinning about a vertical axis (e.g., on ice), the yaw rate could be quite high, but the lateral acceleration could be very low. Also, in this case, use of empirical data to predict lateral Gs could be incorrect because the conditions present (i.e., no slip) utilized to generate the empirical relationship between yaw rate/yaw acceleration and lateral Gs would not be present. Accordingly, it appears to be quite possible that the empirical relationship taught by Sielagoski et al. '679 would predict a high lateral acceleration under certain conditions, when in fact, the actual lateral acceleration would be zero or very low. Once again, if Sielagoski '679 or any of the other cited references actually contemplated the disadvantages associated with use of yaw

rate/yaw acceleration, the references would teach use of measured acceleration, rather than the arrangement actually disclosed and taught by the cited references. "[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is *part* of the 'subject matter as a whole' which should always be considered in determining obviousness of an invention under 35 U.S.C. §103." MPEP 2141.02(III), citing *In re Sponnoble*, 160 USPQ 237 (CCPA 1969) (emphasis added).

Applicant respectfully asserts that the cited references do not recognize the potential problems associated with use of a yaw rate/acceleration and an empirical estimate of lateral acceleration to control a vehicle in a turn, such that there would be no reason to modify the references. Applicant further notes that "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." MPEP 2141.02, citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

Claims 1-7 and 39 depend from claim 1, and are therefore believed to be allowable for those reasons set forth above in connection with claim 1.

Independent claim 11 recites "Determining whether the vehicle is in a turn by detecting change in the vehicle's lateral acceleration" (the phrase "in the vehicle's path" has been deleted to correct a typographical error). As discussed above in connection with claim 1, none of the cited references teach determining whether a vehicle is in a turn utilizing a detected change in a vehicle's lateral acceleration. Accordingly, claim 11 is believed to be allowable for substantially the same reasons as set forth above in connection with claim 1.

Furthermore, claim 11 also recites: "Monitoring for objects and maintaining the vehicle's speed if an object is both stationary and positioned out of the path of the vehicle." The Office Action of August 22, 2007, states that "With respect to claims 11-15, 20, 23-25, 28, 29, and 40, the limitations of these claims have been noted in the rejections above. They are therefore considered rejected as set forth above." However, applicant has reviewed the "rejections above,"

and can find no statement in the Office Action to the effect that "monitoring for objects and maintaining the vehicle's speed if an object is both stationary and positioned out of the path of the vehicle" is disclosed in any of Sielagoski et al. '679, Kato et al. '179, or Kawazoe '493. Applicants have reviewed Sielagoski et al. '679, Kato et al. '179, and Kawazoe '493, and can find no disclosure in these references concerning "monitoring for objects and maintaining the vehicle's speed if an object is both stationary and positioned out of the path of the vehicle," as recited in claim 11. Accordingly, claim 11 cannot possibly be anticipated by any combination of these references for this reason as well as those set forth above.

Claims 12-19 and 40 depend from claim 11, and are therefore believed to be allowable for those reasons set forth above in connection with claim 11.

Independent claim 20 recites: "estimating a path for the vehicle in a turn," and "associating the vehicle path with a first zone area . . . including the turn." Claim 20 further recites: "reducing the vehicle's speed when a detected object is determined to be in the first zone area and maintaining the vehicle's speed when the detected object is determined to be outside of the first zone area." As discussed above in connection with independent claim 11, the Office Action of August 22, 2007, states that "The limitations of these claims have been noted in the rejections above." However, applicant has reviewed the "rejections above" in detail, and can find no statement whatsoever concerning where the features of independent claim 20 are disclosed in any of Sielagoski et al. '679, Kato et al. '179, or Kawazoe '493. The above-noted features of independent claim 20 are not present in these cited references, and no combination of these references can possibly anticipate independent claim 20.

Claims 21-32 depend from claim 20, and are therefore believed to be allowable for those reasons set forth above in connection with claim 20.

Independent claim 38 recites: "Estimating the radius of curvature of the vehicle's path based on a vehicle's speed and lateral acceleration." Claim 38 further recites: "When the combination of the vehicle's speed and the vehicle path's radius of curvature exceed a

predetermined lateral maximum lateral acceleration limit, reducing the vehicle's speed." The Office Action of August 22, 2007, states that "With respect to claim 38, the limitations of this claim have been noted in the rejections above. Sielagoski et al. further disclose [sic] the step of estimating the radius of curvature of the vehicle's path based on the vehicle speed and lateral acceleration (see at least figure 4)." However, applicant has reviewed the "rejections above," and can find no indication concerning the purported teaching of the above-noted features of claim 38 in any of Sielagoski et al. '679, Kato et al. '179, or Kawazoe '493. None of these cited references teach use of a combination of the vehicle's speed and the vehicle path's radius of curvature as recited in claim 38, such that no combination of these references can possibly anticipate independent claim 38. Applicant notes that Sielagoski et al. '679 actually teaches determination of the radius of curvature utilizing vehicle speed and yaw rate (column 6, line 10), <u>not</u> vehicle speed and lateral acceleration as recited in independent claim 38. Furthermore, as discussed above, if a vehicle were spinning on ice, the lateral acceleration could be extremely low, yet the vehicle's yaw rate might be quite high. Clearly, yaw rate and lateral acceleration are not equivalents, and neither Sielagoski et al. '679 nor any of the other cited references contemplate estimation of a radius of a curvature based on vehicle speed and lateral acceleration as recited in independent claim 38.

Independent claim 8 recites a method including detecting an object, and "determining if the object is stationary." Claim 8 further recites: "Determining whether the object is in the vehicle's path during the turn," and "ignoring the object for breaking purposes if the object is determined to be stationary and not to be in the vehicle's path during the turn." The Office Action of August 22, 2007, states that

> With respect to claims 8-10 and 16-19, Sielogoski [sic] et al. and Kato et al. or Kawazoe disclose the claimed invention as discussed above except for the steps of detecting whether there is an object in the vehicle path during the turn and activating the brake if there is. However, such limitations are well known and taught by the Butsuen et al. in at least the abstract, figure 1, 5 and the related text. It would have been obvious

> to an ordinary skill in the art at the time the invention was made to incorporate the teaching of Butsuen in the combined system of Sielogoski [sic] et al. and Kato et al. or Kawazoe in order to improve the safety for the vehicle system during the turn by not only reducing the speed but also controlling the break if there is an obstacle is ignored if it is not in the path of travel.

Accordingly, the Office Action does not even assert that the cited references disclose "determining if the object is stationary" as recited in claim 8. Applicants can only assume that the failure of the Office Action to point out where "determining if the object is stationary" is disclosed in the cited references is a tacit admission that this feature is not disclosed in the cited references. Applicants have reviewed the cited references, and can find no disclosure of "determining if the object is stationary" as recited in claim 8, such that no combination of these references can possibly anticipate independent claim 8.

Applicant further notes that Butsuen et al. '283 is directed to solving a "first problem" involving a curved segment of a road that is canted such that steering angle does not agree with the actual turning angle of the vehicle (column 1, lines 41-44), and a "second problem" in that "it is normal for the driver to be constantly turning the steering wheel back and forth slightly even when the vehicle is traveling along a straight line" (column 1, lines 48-51). None of the cited references even recognize problems associated with distinguishing between stationary objects and moving objects, such that there would be no reason to modify the cited references to include "determining if the object is stationary" as recited in independent claim 8. Applicant again notes that "[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is *part* of the 'subject matter as a whole' which should <u>always</u> be considered in determining obviousness of an invention under 35 U.S.C. §103." MPEP 2141.02(III), citing *In re Sponnoble*, 160 USPQ 237 (CCPA 1969) (emphasis added).

Claims 9-10 depend from claim 8, and are therefore believed to be allowable for those reasons set forth above in connection with independent claim 8.

Applicant has made a concerted effort to place the present application in condition for allowance, and a notice to this effect is earnestly solicited. In the event there are any remaining informalities, the courtesy of a telephone call to the undersigned attorney would be appreciated.

Sincerely,

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Date

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